TECHNICAL SPECIFICATIONS

WASHINGTON STATE FERRIES

M.V. ELWA DRYDOCKING

CONTRACT NO. 00-7175

TECHNICAL SPECIFICATIONS

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M.V. ELWHA DRYDOCKING

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TECHNICAL SPECIFICATIONS

For the following Technical Specifications, the Contractor is to provide all labor, material and equipment to accomplish each and every Bid Item unless otherwise specified.

The Specification Item sub-titles in brackets are for WSF internal use only, for Life Cycle Cost modeling. Bidders should ignore such bracketed sub-titles.

1. DRYDOCK VESSEL

{STRUCTUAL PRESERVATION}

M.V. ELWHA Vessel Particulars:

Length: 382'-2", **Beam**: 73'-2", **Draft**: 18'-9", **Gross Tons**: 2,813.

A. Drydock Vessel for cleaning, painting, inspections, the work specified herein. Upon completion of the drydocking the Contractor conduct an inspection of the Vessel with the WSF Inspector, Staff Chief and Staff Master for the cleanliness of the Vessel.

B. Block spacing shall be at twelve foot (12') centers. Within twenty-four (24) hours of docking, provide three (3) copies of the block position drawing to the WSF Inspector indicating the block positions used.

C. Vessel shall be blocked to expose the previous docking block positions. **Attachment No. 3,** "Block Position Form" showing previous blocking position is provided.

PAINTING OF VESSEL AND HULL PRESERVATION

(ATTACHMENT NO. 1)

WS001, MARINE COATING SPECIFICATION AND COLOR SCHEME

Area Preparation, Surface Preparation, Grit Blasting, Paint Coatings, and Inspection for Vessel's hull, curtain plates, casing and super structure shall be in accordance with Washington State Ferries' Marine Coating Specification, dated 01/03 unless otherwise specified in the following Specifications.

SUPPLEMENTAL SPECIFICATION

(ATTACHMENT NO. 2)

WS002, GENERAL CONTRUCTION REQUIREMENTS

Details of all piping, structural and electrical installations shall be in accordance with Attachment No. 2, WSF General Construction Requirements, unless otherwise specified in the following Specifications.

2. TEMPORARY SERVICE
{STRUCTURAL PRESERVATION}

A. Install one (1) telephone on board in a location designated by the Vessel Staff Chief Engineer. The telephone is to have one (1) outside line with toll-free access to Seattle and vicinity and, if different, one (1) line for local numbers. The telephone shall have touch-tone service if available from the Contractor's telephone system.

B. Provide and maintain electricity, water, safe lighted gangway, sewage and trash removal services while Vessel is in the Contractor's facility. Provide bottled water and portable restrooms while the potable water system is being renewed.

C. Provide Safety and Security for the entire Vessel throughout this Contract period until such time as the WSF has accepted redelivery of the Vessel. Every reasonable precaution shall be taken to protect the Vessel from the hazards of fire, flooding, pilferage, malicious damage, and other events including cataclysmic phenomena of nature.

D. Provide and maintain comprehensive and effective fire prevention and fire detection, and fire fighting programs and systems sufficient to ensure the safety and integrity of the Vessel. Provide personnel trained in shipboard fire fighting techniques and also trained to cooperate with and assist local fire fighting organizations. Provide sufficient shore fire lines to ensure an adequate supply of fire fighting water, at sufficient pressure, and maintain an adequate number of tested fire-hoses aboard the Vessel to effectively fight fires at any location in the Vessel.

E. Provide and maintain portable fire extinguishers in sufficient quantity, and of the appropriate type, to combat local fires of any class. Provide sufficient fire watches, including roving watches as may be required, to ensure that fires that may be inadvertently started by welding sparks or heat, electrical malfunction, or spontaneous combustion are detected, reported and promptly extinguished.

3. SEA CHEST ANODES INSPECTION
{MAINTENANCE}

A. Open the four (4) anode covers located on top of the sea chests for inspection by the WSF Inspector and the Vessel Staff Engineer. (The covers weigh approximately 150 lbs. each and require that two (2) electrical leads each be disconnected prior to anode removal and reconnected upon installation of the new anodes). Units are located ahead of the sea valves, two (2) per engine room. Protect deck from damage during this work Item.

B. Remove existing anodes and install new WSF supplied anodes. Close up access plates using new gaskets, and grommets. The removed anodes will place on the Vehicle deck and remain property of WSF.

C. Prior to installing the new anodes, prepare the access cover plates, including the surface where the anode covers mount, to an SSPC-SP3 Power Tool Cleaning, and apply two (2) coats of INTERNATIONAL Intertuf 262 series Epoxy, 5 mils (DFT) each coat, for a total of 10 mils (DFT).

4. RUDDER INSPECTION, NO. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect staging or provide suitable personnel lifting devices on both sides of No. 1 and No. 2 End Rudders to accomplish all affiliated work required and inspections.

B. Drain and conduct a satisfactory pressure test of the rudders for leaks in the presence of the WSF and USCG Inspector, and the Vessel Staff Engineer. Pressure test will consist of using forty-two inches (42") of water with Manometer or 1.5 PSI on acceptable calibrated pressure gauge that has 1.5 at mid scale range. Accepted test is no leaks for one (1) hour. Within twenty-four (24) hours of completion of tests, provide three (3) copies of the test results to the WSF Inspector.

C. Take and record rudder bearings clearances on No. 1 and No. 2 End Rudders within 24 hours of drydocking the Vessel.

D. Open the Vehicle Deck cover plates on the upper Rudder Stock Bearing and take clearances. Close up cover with new countersunk stainless steel sockets head cap screws and new gaskets. Submit three (3) copies of a written report of findings to WSF Inspector within twenty-four (24) hours of taking readings.

5. PROPELLER INSPECTION, NO. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect, modify, and remove staging in area around No. 1 and No. 2 End Propellers as required to accomplish all affiliated work and inspections.

B. Polish the No. 1 and No. 2 End Propellers by power disk sanding using 80 grit or finer abrasive. Thoroughly clean propeller blades and hub for nondestructive testing.

C. Inspect No. 1 and No. 2 End Propellers for damage and proper blade track. Conduct a nondestructive test using a qualified NDT Inspector, for surface cracks on the blades in the presence of the WSF and USCG Inspectors, and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of findings to the WSF Inspector within twenty-four (24) hours of test completion.

6. EAGLE SEAL WEARDOWN READINGS, NO. 1 AND NO. 2 ENDS

{MAINTENANCE}

NOTE:

A. Drain all oil from the outer Eagle seal system. Dispose of oil.

B. Take Eagle Seal bearing wear down readings in the presence of the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of the written reports of the readings to the WSF Inspector. Upon completion of taking wear down readings, lock wire the liner and housing fasteners. Fill the outer seal with Hyperlube or STP.

7. VOID TANK INSPECTION

{MAINTENANCE}

A. Provide the services of a Marine Chemist to certify voids "SAFE FOR WORKERS TO ENTER". The Vessel's crew will open the thirty-two (32) manholes. The Vessel's crew will close up the manholes using new, Contractor furnished, cotton grommets and gaskets.

8. FRESH WATER WASH

{STRUCTURAL PRESERVATION}

A. Within twenty-four (24) hours upon Drydocking Vessel, perform a Low-Pressure Water Cleaning (LP WC) at 3,000 - 3,500 PSI in accordance with SSPC-SP 12/NACE 5. The wand shall be held no more than twelve inches (12") from surface being washed. The hull from the top of the guard to the waterline, including all horizontal and vertical surfaces of the guard shall be washed. The wash shall leave no visible growth or residue after the hull dries from washing.

B. Within twenty-four (24) hours upon Drydocking Vessel, perform a fire hose wash of the hull with freshwater. The water pressure shall be a minimum of 100 PSI. The hull from the waterline to the keel, including the flat keel, rudders, sea chests and strainer plates, propellers and all other exterior components of the Vessel that is part of the Vessel below the waterline shall be washed. The wash shall leave no visible growth or residue after the hull dries from washing. Remove sea chest strainer plates prior to pressure wash. Prior to closing sea chests they shall be inspected by the WSF Inspector and the Staff Chief Engineer. Reinstall strainer plates upon completion of all related work.

9. PREPARATION OF VESSEL HULL FOR SURFACE PREPARATION {STRUCTURAL PRESERVATION}

NOTE:

Care shall be taken to avoid damage to the "Capac" anodes and reference cells. The anodes are located at frame 54 Port and Starboard, both Ends, nine feet (9') above the keel. The reference cells are located on the Starboard side toward the No. 1 End and Port side toward the No. 2 End.

A. Install protective covering on propellers, propeller bearings, rudder bearings, exposed shafting, CAPAC anodes and reference cell, all through-hull penetration and entrance ways to protect and prevent surface preparation material from causing damage or entering Vessel. Blank the main sea suction openings from the inside while the valves are removed for maintenance, so the valve mounting flange may be painted on the inside diameter (ONLY WHEN REMOVED FOR SEA VALVE INSPECTION or Replacement).

B. Conduct an inspection with the WSF Inspector and the Vessel Staff Chief Engineer prior to beginning surface preparation.

10. SURFACE PREPARATION OF HULL {STRUCTURAL PRESERVATION}

NOTE:

The Contractor shall have the option to grit blast to an SSPC-SP6, Commercial Blast Cleaning or Hydroblast to Hydroblast Standard, HB 2 ½ L, Light Flash Rusting.

The intent is to spot coat repair the existing coating above the waterline and an entire under water body coating. For bidding purposes assume **2,000 Square Feet** of hull**,** above the waterline will require preparation. Surface profile will be 2 to 4 mils per **Attachment No. 1**. Upon the completion of preparation and painting the hull, the Contract will be adjusted upwards or downwards to account for the actual area authorized by the WSF Inspector.

A. Prepare areas of abrasion and corrosion on the hull from the top of the guard to the waterline to an SSPC-SP6, Commercial Blast Cleaning or an Hydroblasting standard HB 2 ½, L Light Flash Rusting.

B. Prepare the entire hull from the waterline to keel including flat keel, sea chests, strainer plates and rudders, to an SSPC-SP6, Commercial Blast Cleaning or a Hydro blasting standard HB 2 ½, L Light Flash Rusting.

11. PAINTING OF VESSEL HULL, ANTI-CORROSION COATING
{STRUCTURAL PRESERVATION}

NOTE:
For bidding purposes assume that **2,000 square feet** of the hull above the waterline and the entire hull below will require the ANTI-CORROSION COATING. The Contract will be adjusted upward or downward using the square footage determined in SURFACE PREPARATION OF HULL Item.

A. Apply one (1) coat of INTERNATIONAL Intertuf 262 Series epoxy, Red, to a minimum of 5 mils (DFT) to surface areas prepared in the, SURFACE PREPARATION OF HULL Item**.**

B. Apply one (1) coat of INTERNATIONAL Interguard 267, Buff, to a minimum of 5 mils (DFT) of contrasting color to all surfaces painted in paragraph "A" of this Work Item.

12. PAINTING OF VESSEL HULL, BELOW WATERLINE, ANTI-FOULING (1ST COAT)
{STRUCTURAL PRESERVATION}

A. Apply one (1) full coat of INTERNATIONAL Interspeed Anit-fouling, BRA 640 RED, to a minimum of 4 mils DFT to all surfaces painted below the waterline.

13. PAINTING OF VESSEL HULL, BELOW WATERLINE, ANTI-FOULING (2ND FULL COAT)
{STRUCTURAL PRESERVATION}

A. Apply one (1) full coat of INTERNATIONAL Interspeed Antifouling 642, black, to a minimum of 6 mils (DFT) to all surfaces of hull below the waterline.

14. DRAFT AND HULL MARKINGS
{STRUCTURAL PRESERVATION}

A. Repaint all draft marks and underwater hull markings, using INTERNATIONAL Interlux Y5584, Shark White**.**

15. PAINTING OF VESSEL HULL, ABOVE THE WATERLINE
{STRUCTURAL PRESERVATION}

NOTE:

For purpose of bidding assume that **2,000 Square feet** of hull above the waterline will require painting with WSF Green. The Contract will be adjusted upward or downward using the square footage determined in SURFACE PREPARATION OF HULL Item.

A. Apply one (1) coat of INTERNATIONAL Intercare 755, WSF Green, to a minimum of 2 mils (DFT) to all surfaces prepared above water line in Painting of Vessel Hull, Anti-Corrosion Coating Item.

B. Apply one (1) coat of INTERNATIONAL Intertuf 262, Black, to a minimum of 5 mils (DFT) to the entire guard.

16. CAPASTIC REPAIRS
{STRUCTURAL PRESERVATION}

A. Renew capastic around the CAPAC anodes using 'Capastic' epoxy trowelng compound made by ELECTROCATALYTIC, INC. For bidding purposes, assume **25 square feet** of failed capastic will require repair. The capastic shall be applied to a minimum thickness of ⅛ inch in the area of the shield out from the faired area around the anode.

B. Build up a minimum of 22 mils DFT of epoxy Anti-Corrosion coating over the capastic areas and the secondary dielectric shield areas.

17. INSTALL RUDDER WRAPPER PLATES
{MAINTENANCE}

A. Grit blast both sides of wrapper plates; No. 1 and No. 2 rudders were the plates will be installed, plus six inches (6") beyond were the plates will be installed to an SSPC-SP 5 white metal blast, with a profile of 4 to 6 mils. Apply Interplate 997 (SW) Nippe-Cerramo pre-construction primer to the plate after blasting.

B. Apply two (2) coats o International Intertuf 262, of contrasting colors, at a minimum of 5 mils (DFT) each coat for a total minimum of 10 mils (DFT) to the inner side of each wrapper plate and on the No. 1 and No. 2 rudders in the location were the plates will be covering.

C. Install and weld a one (1) piece 20.40 lb. mild steel A-36 approximate fifty-six inches (56") wide (28" on each side) by eight feet (8') high, wrapper plate around the inboard edge of the rudder. Wrapper plate must match rudder shape, a one (1) piece wrapper is required. Plug weld six (6) vertical 2" by 1" slots on both sides of the new wrapper plate.

D. Conduct an NDT for any defects in welds in the presence of the WSF Inspector.

E. Apply Duraflake to a minimum of 30 mils to the surface of the wrapper plates and six inches (6") from the wrapper plate on the No. 1 and No. 2 rudders. Supervision of the Duraflake installation shall be obtained from Corrosion Specialists Inc. The contact is Mr. Brad Bradshaw at (360) 568-2098.

F. Ensure a smooth and level transition between the rudder and wrapper plate is obtained to eliminate turbulence and cavitations.

G. Apply AF as outlined in Items 12 and 13.

18. SEA VALVE REPAIRS
{MAINTENANCE}

A. Remove the Treatment Tank Inlet 10" gate valves expansion joints and 10" butterfly valves in the No. 1 and 2 engine rooms.

B. Renew the mounting hardware on the valves and expansion joints with new 316 stainless steel studs, nuts and washers.

C. Prepare 40 square feet in each engine room, 80 total, to an SSPC-SP 3, Power Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 series Epoxy, to a minimum of 5 mils (DFT) each coat for a total of 10 mils (DFT). Topcoat with INTERNATIONAL Intercare 755 series at a minimum of 2 mils (DFT) of proper color, to all prepared areas.

D. Rebuild the four (4) 10" gate valves. Replace the four (4) 10" expansion joints with new Contractor furnished U.S. Rubber 4140 min size USCG approved expansion joints. Rebuild the four (4) Norris 10" butterfly valves and gear boxes with new o-ring and seal kits. Reinstall the expansion joints and sea valves upon completion of the painting using new stainless steel hardware.

E. Sea valves shall be hydrostatically tested and witnessed by the WSF and USCG Inspectors.

19. AUDIO GAUGE TREATMENT TANKS AND SEA CHESTS
{MAINTENANCE}

A. Perform an ultrasonic survey of the Vessel's steel plating thickness on the two (2) saltwater treatment tanks. The survey shall be done on all sides and the top on a six inch (6") grid pattern. The survey shall be performed in the presence of the WSF Inspector. Estimate 150 shots will be required. The tanks are located one (1) in each engine room.

B. Perform an ultrasonic survey of the Vessel's steel plating thickness on the two (2) sea chests. The survey shall be done on all sides and the top on a six inch (6") grid pattern. The survey shall be performed in the presence of the WSF Inspector. Estimate 120 shots will be required. The sea chests are located one (1) in each engine room.

C. The readings shall be taken from the exterior of the tank. The exact areas to be surveyed will be designated by the WSF Inspector. The readings shall be taken through the paint in areas of smooth surface. Remove and restore the paint as required to obtain the readings.

D. Provide the WSF Inspector with three (3) copies of the report in a tabular form, identifying the locations of readings by location, original plate thickness, audio gauge reading taken, and percent wastage. Attach a schematic showing the locations where the shots were taken and the thickness found.

E. Repair any coating damage as required.

20. STERN FRAME REPAIRS, NO. 1 END
{STEEL REPLACEMENT}

A. Erect and remove staging in areas around No. 1 End Propeller blades to accomplish all affiliated work and inspection required.

B. Drain all oil from the outer Eagle seal oil seal system, including the stern tube cavity. Dispose of oil (approximately 350 gallons, each end). Clean the head tank and the bilge sump tank. Flush the piping from the head tank to the bilge sump tank by using ten (10) gallons of clean system oil poured down the piping from the head tank to the bilge sump tank. Clean flushing oil from the bilge sump tank. Close up the head tank and sump tank with new Contractor furnished fasteners and gaskets.

C. Remove the No. 1 propeller and outboard shaft seal. Remove the body bound shaft coupling bolts and draw the tail shaft into the shaft alley. Mark bolts as to location from coupling which they removed from. Modify the bolts as shown on **Attachment No. 4**, Taper Bolt Removal Super Class. Blank off the stern tube openings.

D. Perform a magnetic particle inspection of the tailshaft keyway and taper in the presence of the WSF and USCG Inspectors. Submit three (3) copies of a written report of the findings to the WSF Inspector.

E. Weld build up eroded surfaces designated by the WSF Inspector using an ABS approved welding procedure. Submit a copy of the procedure to the WSF Inspector. For bidding assume **12 square feet** of the stern frame will require welding. This Item will be adjusted upwards or downwards to account for actual square footage authorized by the WSF Inspector.

F. Machine stern tube faces true upon completion of weld buildup to accept the WSF provided Eagle Seals. Drill and tap new mounting holes.

G. Preservation is accomplished in accordance with the hull painting Items.

H. Prior to installing the Inner Shaft Seals provide the services of Sound Propeller to install new seal rings.

I. Reinstall shafting, seals and propeller. Provide the services of Sound Propeller to replace Eagle seal rings pieces six (6) and seven (7) on **Attachment No. 5**, EVD Stern Tube Seal. New seals shall be Contractor furnished. Take Eagle Seal bearing wear down readings after installing seals, in the presence of the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of the written reports of the readings to the WSF Inspector. Upon completion of taking wear down readings, lock wire the liner and housing fasteners. Fill the outer seal with Hyperlube or STP.

J. Prior to installing the rope guards remove the existing zincs and replace with new. Take run out readings on the face of the propeller and the counter bore for the seal. Dial in the outboard liner after propeller installation, run out not to exceed .005". Reading to be witnessed by the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of the readings to the WSF Inspector.

21. RENEW SALT WATER TREATMENT TANK FLANGES
{MAINTENANCE}

A. Clean and gas free all spaces associated with the work, as necessary and obtain a Marine Chemist certificate for "SAFE FOR WORKERS" and "SAFE FOR HOT WORK" for same. Maintain the certificate during the course of the work.

B. Remove the cover to the salt water treatment tank in the No. 1 and No. 2 engine rooms. Disconnect the cathodic protection system prior to removing the cover.

C. Fabricate and install a bolting flange to the tank top using 5" by 3" by ½" A-36 steel. Continuously weld the new flange to the tank top. Install the cover using new gaskets and stainless steel nuts, bolts and washers.

D. Conduct a NDT of the new welds in the presence of the WSF and USCG Inspectors.

E. Reinstall the cathodic protection system.

F. Prepare all areas affected by this work to an SSPC-SP 3, Power Tool Cleaning.

G. Apply two (2) coats of INTERNATIONAL Intertuf 262 series Epoxy, to a minimum of 5 mils (DFT) each coat for a total of 10 mils (DFT).

H. Topcoat with INTERNATIONAL Intercare 755 gloss finish at a minimum of 2 mils (DFT) of proper color, to all prepared areas.

22. CLEAN FUEL TANKS
{MAINTENANCE}

A. The centerline fuel tank and both day tanks shall be opened, cleaned and certified to be gas and toxic vapor free, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS" and "SAFE FOR HOT WORK". Maintain the certificate during the course of the work. The tanks will be at low suction any residual fuel shall be disposed in accordance with Local, State and Federal regulations. Estimated residual fuel is 200 gallons per day tank and 1500 in the centerline tank.

B. Provide temporary lighting for the WSF and USCG Inspectors to inspect the tanks.

C. Install new striker plates in each tank in way of the sounding tubes.

D. Upon completion of all work, close up the tanks using new grommets and gaskets.

23. PIPE COUPONS
{PIPING}

A. Remove piping system coupons as set forth below:

NOTE:

A "pipe coupon" is defined as a section of pipe approximately twelve inches (12") in length removed from an existing, designated piping system. The intent is to remove a designated "coupon" utilizing threaded or mechanical joints at one End to the greatest extent as is practicable. The new pipe can then be, for example, threaded at one End and a new appropriate joint made up at the other End to make the system tight again.

B. The shipyard is to determine where each coupon shall be removed in agreement with the below TABLE. Submit the location to the WSF Inspector prior to removal. Pipe coupons shall be removed from areas of suspect for corrosion problems due to their location and configuration.

TABLE ~ PIPING COUPON LOCATIONS

Item No.	Service	Size	Qty	End P/S	Location
1	Fire Pump Suction	6"	2	1&2	
2	Fire Pump Discharge	4"	2	1&2	
3	Bilge Ovbd Discharge	4"	1	1	
4	Bilge Discharge to oily water holding tank	2½"	1	1	
5	Flushing Water Discharge	1½"	1	2	Engine Room No. 2 above pump
6	POTW Discharge	1¼"	1	2	Engine Room No. 2 above pump
7	Bilge Suction	2½"	2	2	

1

TABLE ~ PIPING COUPON LOCATIONS					
Service		**Size**	**Qty**	**End P/S**	**Location**
8	Bilge Suction	6”	1	2	
9	Bilge Ovbd Discharge	4”	1	2	
10	Bilge Discharge to oily water holding tank	2½”	1	2	
11	Vehicle Deck Sprinkling	2½” to 3”	2	1 Port	Vehicle Deck overhead
12	Deck Sprinkling	2½” to 3”	2	2 Port	Vehicle Deck overhead
13	Deck Sprinkling	2½” to 3”	2	1 Stbd	Vehicle Deck overhead
14	Deck Sprinkling	2½” to 3”	2	2 Stbd	Vehicle Deck overhead
15	Deck Sprinkling	2½” to 3”	2	1 CL	Vehicle Deck overhead
16	Deck Sprinkling	2½” to 3”	2	2 CL	Vehicle Deck overhead
17	Deck Sprinkling	3”	2	2 Port	Vehicle Deck overhead
18	Deck Sprinkling	3”	4	Port and Stbd	Inside Mchry Casing at 90° elbow, on horizontal
19	Firemen	4”	2 ea.	1&2	Overhead of Lower Passenger Deck
20	Firemen	2½”	1 ea.	1	Overhead E/R No. 1
21	Firemen	2½”	1 ea.	1	Overhead E/R No. 2

C. Renew piping in kind where all piping system coupons were removed.

D. Provide labor, material, and equipment to operationally test the piping system coupon replacements. In addition to operational testing, the entire Potable Water System shall be disinfected and certified in accordance with applicable regulations.

E. Prepare, coat, and restore insulation in way of all piping system coupon replacement areas.

F. Submit three (3) copies of a written report on the condition of piping inspection to the WSF Inspector. Label and deliver all removed piping system coupons to the WSF Representative. Coupons shall be permanently labeled with the name of the Vessel, date coupon was harvested, system, and harvest location. The Contractor shall fabricate and provide wooden crates, with lid, to hold all removed piping coupons. Each crate shall be of 200 lbs. maximum loaded weight. All coupons shall be stored in this crate and upon completion the crate shall be loaded on WSF provided transportation for transfer to a WSF facility for storage.

24. STEEL INSERT NO. 4 VOID

{STEEL REPLACEMENT}

A. Insert 15 square feet of 20.4 lb ASTM A-36/ ABS GR A plate in the No. 4 Void under the SCR. Provide a sketch of the proposed insert.

B. Clean and gas free all spaces associated with the Work, as necessary, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS", and "SAFE FOR HOT WORK". Maintain the certificate during the course of the Work. Provide fire watches as required.

C. Provide ABS mill certification for all new steel prior to moving the steel on board. All new steel shall be grit blasted to SSPC-SP 10, Near White Blast and immediately primed with weld-through primer, which is compatible with the coating systems used on the Vessel.

D. Crop and renew 4' long frame located adjacent to the insert. Beam to shell connections shall be skip welded per the original installation.

E. Test all new welds in the presence of the WSF and USCG Inspectors.

F. Interior surfaces shall be coated to match the surrounding surfaces. The exterior will be coated in conjunction with the underwater body coating Items.

25. STEEL REPAIRS CAR DECK AND ABOVE
{STEEL REPLACEMENT}

A. Renew approximately 960 square feet total of 7.65 pound wasted deck steel in the Passenger Cabin as per **Attachment No. 6**, M/V ELWHA, Sketch Passenger Deck Steel Replacement.

Area (1) Approximately 100 square feet from approximately frame 16 to 32 on No. 1 End Port Side.

Area (2) Approximately 30 square feet from approximately frame 0 to frame 6 on No. 1 End Port Side.

Area (3) Approximately 4 square feet from approximately frame 16 on No. 1 End Port Side.

Area (4) Approximately 20 square feet from approximately frame 40 to frame 44 on No. 2 End Port Side.

Area (5) Approximately 4 square feet at frame 48 on No. 1 End Starboard Side.

Area (6) Approximately 160 square feet at frame 16 to 32 on No. 2 End Starboard Side.

Area (7) Approximately 4 square feet at frame 20 on No. 2 End Starboard Side.

Area (8) Approximately 80 square feet from approximately frame 44 to frame 48 on No. 2 End Starboard Side.

Area (9) Approximately 100 square feet at frame 12 on No. 1 End Center tunnel.

Area (10) Approximately 200 square feet at frame 72 centerline No. 2 End.

Area (11) No. 2 End Starboard 28 square feet at frame 76.

Area (12) No. 2 End at frame 76 approximately 20 square feet.

Area (13) No. 1 End port at frame 76 approximately 200 square feet and the 10 square feet in the engineer's head deck.

A joint survey between the Contractor and the WSF Inspector will be conducted to layout the actual steel to be renewed. The Contract will be adjusted upward or downward for actual amount renewed as authorized by the WSF Inspector.

B. Renew the bulkhead surrounding the inlet ventilation louvers in the casing to the No. 1 and No. 2 motor rooms and engine rooms. A total of twelve (12) louvers.

C. Insert the existing bulkheads in the stairway between the upper and lower passenger decks on the No. 1 and 2 Ends. These bulkheads form a void. Provide a bolting ring and access cover for the future. Estimate approximately 20 square feet of inserts.

D. Insert the existing casing bulkhead to provide a bolting ring for the reinstallation of the louvers. The louvers will be installed using new stainless steel hardware.

E. Renew six feet (6') of the No. 1 End Starboard Bulwark. Remove and reuse the existing chock. Bulwark shall be 10.2 pound A-36 steel plate. The stiffeners shall be 20.4 pound A-36 steel to match the existing shapes.

F. Clean and gas free all spaces associated with the Work, as necessary, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS", and "SAFE FOR HOT WORK". Maintain the certificate during the course of the Work. Provide fire watches as required.

G. All new steel shall be grit blasted to SSPC-SP 10, Near White Blast and immediately primed with weld-through primer, which is compatible with the coating systems used on the Vessel.

H. Remove the deck coverings, underlayment, seats, seat sub bases, foundations, joiner work, ventilation ducting and all other interferences as required to complete this work. All seats, seat sub bases, foundations and all interferences removed shall be stored in a clean dry area for reinstallation upon completion of work.

I. Provide the WSF Inspector with three (3) copies of a detailed sketch showing the size and the exact location of all deck steel renewed.

J. Upon completion of welding and prior to coating all welds shall be tested using a method acceptable to the WSF and USCG Inspector.

K. After completion of all hot work and steel renewals prepare all areas of new steel and damaged paint to SSPC-SP 3, Power Tool Cleaning. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT) to all new steel surfaces.

L. Apply one (1) coat of Jotun Primastic Epoxy primer to 8 mils (DFT) to all new steel surfaces.

M. Install new USCG approved structural fire protection underlayment level with the surrounding deck area in all areas affected by this work. The new underlayment shall provide A-60 structural fire protection. Provide new deck coverings, to match existing, in all areas affected by this work. New underlayment and tile shall contain no ACM.

N. Upon completion of all work reinstall all seats, seat sub bases, foundations, joiner work, ventilation ducting and all other interferences removed. Clean and wax deck areas.

26. EOS SUPPLY VENT DUCT REPLACEMENT

{STRUCTURAL PRESERVATION}

A. Renew approximately twenty-six feet (26') of the EOS supply duct from the casing flange to the Curtain plate located on the upper vehicle deck.

B. All new steel shall be 11 gauge hot dipped galvanized. Use the existing duct as a template.

C. Insert the curtain plate with new A-36 steel in way of the ventilation penetration.

D. Reuse the existing louver.

E. Install the louver and new ducting using new stainless steel hardware.

F. New steel shall be coated in conjunction with Vehicle Deck and Curtain Plate coating Items.

27. SECURITY SYSTEM FOUNDATIONS

{SECURITY}

A. Install security equipment foundations for all exterior cameras, motion detectors, cable penetrations and stud runs as shown on **Attachment No. 7,** WSF Dwg. 8000-639-095-02, All Vessels Homeland Security Plan Typical Foundations Standard and **Attachment No. 8**, WSF Dwg. 8204-639-095-01, M/V ELWHA Homeland Security Plan.

B. Prepare all areas affected by this work to an SSPC-SP 3, Power Tool Cleaning. New steel shall be coated in conjunction with Vehicle Deck and Cabin coating Items.

28. IBA RACK REFURBISHMENT

{STRUCTURAL PRESERVATION}

A Refurbish the Life Raft Rack system including stainless steel tubing, steel fittings and hangers and hardware using new 316 stainless steel fittings and tubing. Remove Life rafts from the racks and store in dry covered location.

B. Disconnect and drain the hydraulic fluid and dispose in accordance state and federal laws. Remove the pumps and rams from the vessel and deliver to the WSF Eagle Harbor facility. Plug all ports on the rams and pumps to ensure no contamination occurs.

C. Remove the racks from the Vessel. Clean the threads of the manual overrides and protect them from damage during the surface preparation. The racks will be prepped and coated in conjunction with the vehicle deck coating Item.

D. Remove the hardware and components prior to surface preparation. Renew the mounting hardware and install the new components upon completion of the painting.

E. Grease the threads of the manual override system with grease approved by the WSF Vessel Staff Chief.

F. Flush the tubing to remove all containments. Refill the system with new hydraulic oil.

G. Demonstrate the operation of the Life Raft Rack system release components using suitable test weights on the racks in place of the life raft containers to the WSF and USCG Inspectors and Construction Master.

29. HAND RAIL REPAIRS

{STRUCTURAL PRESERVATION}

A. Replace existing forty feet (40') of the existing Vehicle Deck cutout opening hand rails with 1¼" schedule forty A-36 steel pipe. The sections to be renewed will be designated by the WSF Inspector.

B. Continuously weld new handrails in way of the curtain plate.

C. New steel shall be coated in conjunction with Vehicle Deck and Curtain Plate coating Items.

TOPSIDE
PREPARATION AND PAINTING
TOPSIDE ZONE DESCRIPTIONS

M.V. ELWHA is divided into eight (8) Zones for inspection, surface preparation, painting, and bidding purposes. No areas in the Zones have been intentionally omitted for preparation or painting. It is the Contractor's responsibility to prepare and coat all surfaces as required by the Specification. The following Zone descriptions are provided for identification purposes.

NOTE:
Prior to commencing surface preparation the Contractor will present all areas for inspection, by the WSF Inspector and the Vessel Staff Chief Engineer, of the protective measures taken to prevent harm or damage to the Vessel's equipment, other surfaces, and systems.

Zone No. 1 Port and Starboard Exterior Curtain Plating from the inboard top edge of the Guard to the Passenger Deck level and from the Curtain Plate extremes at No. 1 and No. 2 End including the anchor pockets.

Zone No. 2 Port and Starboard Interior Curtain Plating from the inboard top edge of the Guard to the Passenger Deck level and from the Curtain Plate extremes at No. 1 and No. 2 End, including the Fixtures, Vents and Louvers. Vehicle Deck vehicle lanes area extending from No. 1 to No. 2 End. This area includes the curbing, forward face of the thwart ship coaming between the Pickleforks, inboard Machinery Casings surfaces, Overhead, Ventilation Louvers, Ventilation Ducting, Piping, Curbing, Light Fixtures, and all Appendages, including all Machinery Casing vestibules and small boat davits.

Zone No. 3 Passenger Deck exterior surfaces (outside of the Passenger Cabin) from the Passenger Deck level to the top edge of the Curtain Plate above the Passenger Cabin windows and below Texas Deck handrails. Includes all weather surfaces of both the Port and Starboard Passenger Cabin exteriors, Troughs including the fronts of the cabin and Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, No. 1 and No. 2 End, Promenade Deck exteriors, No. 1 and No. 2 End, Promenade Deck interiors, No. 1 and No. 2 End Picklefork areas, all Attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations, Doors and Passenger seating.

Zone No. 4 Deck surface areas. Includes Texas Deck level deck and all Housetops, Passenger Deck level decks, Promenades and Pickleforks, Vehicle Deck walkways and all Ladders, Stairways, Landings, Safety areas and Non – Skid Vehicle Decks.

Zone No. 5 Pilothouse and cabins including the elevator trunk exterior surfaces. Includes all weather surfaces including Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, all Attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations.

Zone No. 6 Exhaust stack and cabin including all exterior surfaces. Includes all weather surfaces including Safety Handrails below the windows, overhang above the windows, Drain Pipes and hangers, all Attachments and Appurtenances, Ladders, Overheads, Bulkheads, Fire Stations.

Zone No. 7 Stairway vertical and overhead surfaces from Lower Vehicle Deck to Passenger Deck.

Zone No. 8 Handrails, Railings, Screens, and Gates on all decks, Ladders, Passenger Deck to the top of the Mast.

30. PREP AND PAINTING ZONE 1, CURTAIN PLATE {STRUCTURAL PRESERVATION}

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 - 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zone 1. The wand shall be held no more than twelve inches (12") from surface being washed. Use **JOTUN Wash Prep** or equal when washing.

Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

B. Prepare all of Zone 1 areas to a Hydroblasting standard HB 2 ½, L Light Flash Rusting or grit blast to an SSPC-SP6, Commercial Blast Cleaning. Remove the MES containers and the anchors prior to beginning surface preparation. Blast the anchors and chain to an SSPC-SP6, Commercial blast cleaning while they are removed from the Vessel.

C. Anchor chain and wire cable shall be inspected for wear.

D. Apply one (1) coat of JOTUN Organic Zinc or equal to 2 mils (DFT).

E. Apply one (1) coat of Jotun Primasti Epoxy primer or equal to 6 mils (DFT) to all prepared surfaces. Hand-stripe all edges.

F. Top-coat the entire Zone 1 area with JOTUN Hardtop Flexi Urethane or equal to a 3 Mils (DFT) to match existing color.

G. Upon completion of all work reinstall the anchor and MES's.

31. PREP AND PAINTING ZONE 2, VEHICLE DECKS
{STRUCTURAL PRESERVATION}

NOTE:
The Contractor is advised to exercise care and caution to assure that all insulation, light fixtures, speakers, cabling, alarms and appurtenances are protected and not damaged during the course of this work.

A. Remove approximately 200 unused studs from the curtain plate and overhead. Grind surface smooth.

B. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zone 3. The wand shall be held no more that twelve inches (12") from surface being washed. Use JOTUN Wash Prep or equal when washing.

C. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

D. Remove 300 wireway lower brackets from the overhead of the car deck and renew using new stainless steel hardware. Reband wireways using new stainless steel banding and rubber. Renew 200 stud run wireway clips.

E. Prepare Zone 2 areas of abrasion and corrosion. For bidding purposes assume **30,000 square feet** will require preparation to a Hydroblasting standard HB 2 ½, L Light Flash Rusting or grit blast to an SSPC-SP6, Commercial Blast Cleaning. Areas that cannot be blasted shall be prepared to a SSPC-SP11, Power Tool Cleaning to Bare Metal. Include the top side of the stiffener above the window cutout and curbing and the boat davits. Remove the MES containers prior to beginning surface preparation. All ratholes and sharp edges of all angles and cutouts shall be mechanically ground to remove any sharp edges. The zone includes fire stations and fueling and tank vent stations.

F. Remove the screens from the boat stations grit blast. Grit blast to an SSPC-SP6, Commercial Blast Cleaning prior to coating. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT) to all steel screens. Apply one (1) coat of Jotun Epoxy Primastic primer to 6 mils (DFT) to all prepared surfaces. Hand-stripe all edges. Top-coat the entire Zone 8 area with JOTUN Hardtop Flexi Urethane to a 3 Mils (DFT) to match existing color. Install the screens using all new 316 SS hardware.

G. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT) all areas prepared in paragraph E.

H. Apply one (1) coat of Jotun Primastic Epoxy primer to 6 mils (DFT) to all prepared surfaces to all areas coated on paragraph G. Hand-stripe all edges.

I. Top-coat the entire Zone 2 area with JOTUN Hardtop Flexi Urethane to a 3 Mils (DFT)I to match existing color.

32. PREP AND PAINTING ZONE 3, PASSENGER CABIN EXTERIOR {STRUCTURAL PRESERVATION}

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zones 3. The wand shall be held no more that twelve inches (12”) from surface being washed. Use JOTUN Wash Prep or equal when washing.

B. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

C. Remove all windows on the port side of the lower passenger cabin and all except the center nine on the starboard side. Insert approximately 40 square feet of deteriorated steel in the cabin as designated by WSF Inspector.

D. Prepare the entire lower passenger cabin exterior. Prepare areas of abrasion and corrosion on the upper passenger cabin. For bidding purposes assume 2,000 square feet will require preparation.

NOTE:

The Contractor shall have the option to grit blast to an SSPC-SP6, Commercial Blast Cleaning or Hydroblast to Hydroblast Standard, HB 2 ½ L, Light Flash Rusting.

E. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT).

F. Apply one (1) coat of Jotun Epoxy primer or equal to 6 mils (DFT) to all prepared surfaces. Hand-stripe all edges.

G. Top-coat the entire Zone 1 area with JOTUN Hardtop Flexi Urethane or equal to a 3 Mils (DFT) INTERNATIONAL to match existing color.

H. Upon completion of all work reinstall the windows. Upon completion of Fresh Water Wash, the Contractor shall wash the external surfaces of all windows to remove any streaking, paint chips, and any other residue left by the water wash.

33. PREP AND PAINTING ZONE 4, DECKS AND CABIN TOPS {STRUCTURAL PRESERVATION}

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, on the Upper Passenger Deck, Texas deck Cabins and pilothouse tops. The wand shall be held no more that twelve inches (12") from surface being washed. Use **JOTUN Wash Prep** or equal when washing. Perform an inspection of the entire fresh water washed areas to the satisfaction of the WSF Inspector prior to proceeding with any preparation for painting, or painting.

B. Prepare the entire area of the Upper Passenger Deck and pickleforks to SSPC-SP6, Commercial Blast Cleaning with a track blaster to obtain a 2 to 3 mil profile. Remove all traces of blast beads from all areas of the Vessel. Areas that are inaccessible to a track blaster shall be prepared to SSPC-SP11, Power Tool Cleaning to Bare Metal.

C. Prepare areas of abrasion and corrosion on the Texas Deck, pilothouse and cabin tops. For bidding purposes assume 2,000 square feet will require preparation. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

D. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT) all steel areas prepared in paragraphs B and C.

E. Apply one (1) coat of Jotun Epoxy primer to 8 mils (DFT) to all prepared surfaces to all areas coated on paragraph D.

F. Broadcast Aluminum Oxide nonskid over the removed areas.

G. Top-coat the entire Zone 4 area with JOTUN Hardtop HB to a 3 Mils (DFT) I to match existing color.

34. PREP AND PAINTING ZONE 5, PILOTHOUSE AND SUPERSTRUCTURE {STRUCTURAL PRESERVATION}

NOTE:
For bidding purposes, assume that **3000 Square Feet** will require preparation. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zones 5. The wand shall be held no more that twelve inches (12") from surface being washed. Use JOTUN Wash Prep or equal when washing.

B. Prepare areas of abrasion and corrosion. For bidding purposes assume 4,000 square feet will require preparation.

NOTE:
The Contractor shall have the option to grit blast to an SSPC-SP6, Commercial Blast Cleaning or Hydroblast to Hydroblast Standard, HB 2 ½ L, Light Flash Rusting.

C. Areas prepared in paragraph B of this Item will be coated with one (1) coat of JOTUN Organic Zinc to 2 mils (DFT).

D. Apply one (1) coat of Jotun Epoxy primer to 6 mils (DFT) to all prepared surfaces to all areas coated on paragraph C. Hand-stripe all edges.

E. Top-coat the entire Zone 5 area with JOTUN Hardtop Flexi Urathane to a 3 Mils (DFT)I to match existing color.

35. PREP AND PAINTING ZONE 6, STACKS AND MASTS
{STRUCTUAL PRESERVATION}

NOTE:
For bidding purposes, assume that **1500 Square Feet** will require preparation, staging will be required. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zones 6. The wand shall be held no more that twelve inches (12") from surface being washed. Use JOTUN Wash Prep or equal when washing.

B. Prepare areas of abrasion and corrosion. For bidding purposes assume 1,500 square feet will require preparation.

NOTE:
The Contractor shall have the option to grit blast to an SSPC-SP6, Commercial Blast Cleaning or Hydroblast to Hydroblast Standard, HB 2 ½ L, Light Flash Rusting.

C. Areas prepared in paragraph B of this Item will be coated with one (1) coat of JOTUN Organic Zinc to 2 mils (DFT).

D. Apply one (1) coat of Jotun Epoxy primer to 6 mils (DFT) to all prepared surfaces to all areas coated on paragraph C. Hand-stripe all edges.

E. Top-coat the entire Zone 6 area with JOTUN Hardtop Flexi Urethane to a 3 Mils (DFT)I to match existing color.

36. PREP AND PAINTING ZONE 7, STAIRWELLS
{STRUCTUAL PRESERVATION}

A. Perform a Low Pressure Water Cleaning (LP WC) at 3,000 – 5,000 PSI to achieve a condition of SC-1 IAW Table 2 (Non-visual Surface Preparation Definitions) in SSPC-SP 12/NACE 5 Publication, in Zones 7. The wand shall be held no more that twelve inches (12") from surface being washed. Use JOTUN Wash Prep or equal when washing.

NOTE:
The stairways and landings are between the passenger doors down to the vehicle deck.

B. Remove the deck tile and bullnose on the stair treads and the nonskid on the landings.

C. Prepare areas of abrasion and corrosion. For bidding purposes assume 1,000 square feet will require preparation.

NOTE:

The Contractor shall have the option to grit blast to an SSPC-SP6, Commercial Blast Cleaning or Hydroblast to Hydroblast Standard, HB 2 ½ L, Light Flash Rusting.

D. Areas prepared in paragraph C of this Item will be coated with one (1) coat of JOTUN Organic Zinc to 2 mils (DFT).

E. Apply one (1) coat of Jotun Epoxy primer to 6 mils (DFT) to all prepared surfaces to all areas coated on paragraph D. Hand-stripe all edges.

F. Top-coat the entire Zone 7 area with JOTUN Hardtop Flexi Urethane to a 3 Mils (DFT)I to match existing color.

G. Install new RCA Rubber Co., abrasive strip rubber stair thread and matching riser, color 545 VI 608, the full width of the stairway. The landings shall have non-skid applied in accordance with Item 33.

37. PAINTING ZONE 7, STAIRWELL STRIPPING
{ MAINTENANCE}

A. Paint a six inch (6") wide strip parallel to the handrail on each side of the stairwell from the car deck to the cabin door.

B. Paint the cabin side of the door frame to match the stairwell stripe.

C. Submit color samples to the WSF Inspector for approval. The stairwell colors shall be:

End No. 1, Port Red

End No. 1, Starboard Green

End No. 2, Port Blue

End No. 2, Starboard Orange

38. PREP AND PAINTING ZONE 8, HANDRAILS AND SCREENS
{STRUCTUAL PRESERVATION}

A. Prepare handrails by roughing the surface with sand paper and thinner wiping on the Pickleforks, Upper Passenger Deck and Texas Deck.

B. Remove the screens from the Picklefork railings. Grit blast to an SSPC-SP6, Commercial Blast Cleaning prior to coating.

C. Apply one (1) coat of JOTUN Organic Zinc to 2 mils (DFT) to all steel screens.

D. Apply one (1) coat of Jotun Epoxy primer to 6 mils (DFT) to all prepared surfaces to all areas coated on paragraph B. Hand-stripe all edges.

E. Top-coat the entire Zone 8 area with JOTUN Hardtop Flexi Urethane to a 3 Mils (DFT)I to match existing color.

F. Install the Picklefork screens using all new 316 SS hardware.

39. SIGNS
{STRUCTUAL PRESERVATION}

A. Map all signs and stencils prior to being surface preparation in Zones 2 through 8.

B. Renew all signs and stencils upon completion of painting.

40. FABRICATE REMOVABLE VENT COVERS
{STEEL REPLACEMENT}

A. Remove a total of ten (10) vent covers (½ rounds) located on the port and starboard curtain plate.

B. Weld four (4) tabs on each ½ round.

C. Upon completion of the Curtain Plate surface preparation reinstall the ½ round vent covers using tabs to facilitate future removals.

41. REPLACE DECK DRAINS
{STRUCTURAL PRESERVATION}

A. Renew the all exterior deck drain piping on the upper and lower passenger decks. The piping runs from the upper passenger deck to the trough and from the trough to the curtain plate with PVC schedule 40 piping.

B. New piping shall be coated in conjunction with Curtain Plate coating Item.

42. VENTILATION SCREEN REPLACEMENT
{STRUCTURAL PRESERVATION}

A. Renew the motor room exhaust ventilation screens in the curtain to the No. 1 and No. 2 motor rooms. A total of two (2) screens will be replaced.

B. Replacement screen shall be made from 316 SS wire mesh with a stainless steel flat bar frame using the existing screens as a template.

C. The new screens will be installed using new 316 stainless steel hardware.

D. New steel shall be coated in conjunction with Curtain Plate coating Item.

43. AIR HORN RELOCATION
{MAINTENANCE}

A. Relocate the air horn from the top of the No. 1 and No. 2 pilothouse tops to the No. 1 and No. 2 masts.

B. Fabricate a new foundation and locate on the masts in the spot designated by the WSF Inspector.

C. Extend the air piping to the new installation.

D. Remove the existing foundations and grind smooth.

E. Upon completion of the installation conduct a operational test of the air horns.

F. New steel shall be coated in conjunction with Mast coating Items.

44. PIPING RENEWAL
{PIPING}

A. Using **Attachment No. 9**, WSF Dwg. 3172-S48-4 Hot and Cold Fresh Water System Piping Diagram as a guide renew the hot and cold water systems from the discharge side the pumps throughout the Vessel. Renew the deck penetrations and twelve inches (12") of steam and condensate piping at each radiator in the crews quarters and upper and lower passenger decks.

B. Material for the potable water system shall be as specified on **Attachment No. 9**. Material for steam and condensate piping is schedule 40 black iron piping, ASTM A-53. Deck sleeves shall be 1" schedule 80 pipe.

C. Carefully map any interferences and restore them upon completion of the installation. Map all label plates for installation or renewal upon completion.

D. Renew all pipe insulation in kind.

E. Conduct a hydrostatic test of all new piping.

F. Upon completion of the installation the entire potable water system shall be cleaned and disinfected and flushed in strict accordance with the requirements of the USCG and WHO Guide to Ship Sanitation.

G. The potable water system shall be flushed after disinfecting that water drawn from the most remote tap is free from all color or taste.

H. A signed "Certificate of Disinfection" shall be provided to the WSF Inspector prior to the system being placed in service and Vessel Redelivery.

45. APPLICATION OF CAULKING COMPOUND

{STRUCTURAL PRESERVATION}

NOTE:
Areas requiring application of caulking compound are the upper and lower outboard vehicle lanes from the inboard casings outboard to and including the inside of the Curtain plating and all promenade areas. Caulking shall be an A. C. Product, Flexible Sealant, White. Caulking compound is to be applied in accordance with the manufacturer's recommendations.

A. Apply caulking compound to all non-welded areas between skip welds and pin holes in the welds.

B. Caulking shall be applied after the application of the Primastic primer and prior to the application of the Hardtop Flexi.

NOTE:
For bidding purposes, assume 8,000 Lineal Feet (LF) of caulking will be required. Upon completion of the preparation and painting, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

46. SEA VALVE REMOTE OPERATORS

{PIPING}

A. Remove the two (2) Semiconductor Controlled Rectifier (SCR) overboard valves located one (1) in each the No. 1 and No. 2 motor rooms. Valves are two inch (2") gate valves.

B. Install contractor furnished Milwaukee 150# gate valve No. 1550CB2 and BFG Marine flexible shaft remote operating system. New valves shall be hydrostatically tested and witnessed by the WSF and USCG Inspectors. Install the new valves using new 316 stainless steel hardware.

C. Install flexible shaft valve remote operating gear from new overboard valves to the remote operating deck boxes to be located in the curbing on the lower vehicle deck. Bend radius on the flexible shaft shall not be less than the manufacturer's recommendations.

D. Size the deck boxes to penetrate both the curbing and vehicle deck. Install remote grease fitting in the curb to permit greasing the flexible shaft from the vehicle deck. The deck boxes are to be continuously welded at the curbing and vehicle deck.

E. Prepare all disturbed areas to an SSPC-SP 3, Power Tool Cleaning. Coat to match surrounding areas.

F. Provide new label plates to identify the remote operators and grease fittings.

(END)